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# Revenue-productive Income Tax Structures and Tax Reforms in Emerging Market Economies

## Evidence from Bulgaria

*Fareed M. A. Hassan*

Any consideration of alternative tax systems must consider underlying levels and distributions of income. But broader, simpler tax bases would facilitate administration, increase revenues, and reduce opportunities and incentives for tax evasion.



## Summary findings

Using a household budget survey for 1992, Hassan shows the poor revenue performance and distributional impact of Bulgaria's personal income tax system. He explores the implications for revenue and income distribution of two alternative tax systems — a flat tax and a progressive but simpler three-brackets tax system.

He demonstrates that simpler tax structures with lower tax rates could achieve at least equal revenue and distributional objectives and are superior in terms of efficiency and equity. (The findings are robust when Bulgaria's significant tax evasion is included.)

But tax changes since 1992 have, if anything, moved Bulgaria even further from a simple income tax system:

the number of rates and brackets increased from 7 to 10, and the levels of exemption remain unchanged.

(Complex, higher rates complicate administration and enforcement and provide incentives for tax evasion. And in the alternative systems Hassan explores, the poor are protected with higher exemptions.)

Fortunately, the country's personal income tax structure began to move toward less nominal progressivity after Bulgaria's 1997 tax reform program. The tax rate in the top income bracket was reduced from 52 percent to 40 percent, the number of tax brackets was halved, and the exemption level was increased 20 percent (reducing tax burdens on the poor).

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This paper — a product of the Poverty Reduction and Economic Management Sector, Europe and Central Asia Region — is part of a larger effort in the region to analyze the social and revenue dimensions of tax reforms in transition economies. Copies of the paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Alison Panton, room H11-033, telephone 202-458-5433, fax 202-477-0816, Internet address [apanton@worldbank.org](mailto:apanton@worldbank.org). The author may be contacted at [fhasan@worldbank.org](mailto:fhasan@worldbank.org). June 1998. (25 pages)

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**Revenue-productive Income**

**Tax Structures and Tax**

**Reforms in Emerging Market Economies**

**Evidence from Bulgaria**

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## **Revenue-productive Income Tax Structures and Tax Reforms in Emerging Market Economies**

### **Evidence from Bulgaria**

#### **1. Introduction**

Almost all emerging market economies (EMEs) are contemplating fundamental reforms of their tax systems. These reforms are determined by country-specific combination of factors including the advice of external experts and international agencies (Tanzi, 1991, World Bank, 1988 and Harberger, 1993), acute pressures from expenditure and revenue sides of the budget (Bogetic and Hillman, 1994), the increasing complexity of the administrative task (Bird, 1989 and Tanzi, 1992), and the internal political economy of public finance reforms (Bogetic and Hillman, 1995).

Political economy factors, however, often clash with the recommendation of experts who emphasize simplicity and transparency in the tax systems. As a result, although tax reforms may start with good intentions and well-defined objectives of the reformers, the outcome is often different from what it was envisaged at the outset. For example, Shome and Escolano (1993), in their survey of tax policy in the Former Soviet Union countries show that despite substantial effort on tax policy reform, the tax systems are often becoming more, not less complicated and transparent. Also, the Bulgarian authorities initiated far-reaching tax reforms with the objective of creating a tax system consistent with a market economy (Chand and Lorie 1993); these include the replacement of the old turnover tax system by a modern, single-rate value added tax, and the reduction of the corporate income tax rates. But in other areas, notably personal income taxation, the tax reform has not resulted in a simpler tax structure which is compatible with the more demanding administrative task and powerful incentives for evasion that characterize EMEs. The amendment to the 1992 Personal Income

Tax Law enacted in March 1993 resulted in a substantial increase in tax rates and the number of tax brackets.

In late 1997 Bulgaria adopted major tax reform measures to be effective in 1998. These measures include: (i) reducing marginal tax rates on both personal and corporate incomes to 40 percent; (ii) aligning the top marginal personal tax rate with the corporate tax rate to diminish the incentive to shift income among the categories of personal income, partnership income, and corporate income; (iii) reducing tax burdens on the poor by raising the exemption level by 20 percent; and (vi) flattening personal income tax rate schedules as the number of tax brackets has been halved. However, the new personal income tax structure tax resulting from the 1997 amendment to the 1993 Personal Income Tax Law resembles, to a greater extent, the 1992 tax system<sup>1</sup>.

Given the 1992, 1993, and 1997 reform episodes, the similarity of the 1997 personal income tax schedule to the 1992 structure, and the availability of a detailed household budget survey for 1992, this paper attempts to examine the revenue adequacy and equity effects of Bulgaria's tax reform experience. In particular, the paper seeks to analyze the following two issues, which should be of broader interest in Bulgaria, and in other EMEs. First, it examines the effects of the 1992 personal income tax system on revenue and post-tax income distribution. Second, it explores if an alternative, simpler tax structure with lower tax rates could achieve at least equal revenue and distributional objectives as the 1992 system, and demonstrates that a system with lower rates is superior in terms of revenues and distributional effects.

To answer the second, counterfactual question, which is of particular interest for tax policy, I examine the effects of simplifying the existing personal income tax system in three interrelated areas: (i) reducing the number of tax brackets, (ii) lowering tax rates, and (iii)

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<sup>1</sup>/The 1997 system exemplifies a progressive 5-tax bracket structure (including the lowest-tax free bracket) with five rates of zero, 20, 26, 30, and 40 percent. This pattern of tax rates is similar to the 1992 system given in Table 1 below.

raising the income threshold at which a positive tax payment must be made. In each case the objective is to obtain better or at least revenues equal to those that would be obtained under the 1992 system. Furthermore, the distributional consequences of the proposed tax reform are examined, taking into account the existing income distribution as reflected in the 1992 household budget survey.

The type of analysis and principles enunciated are potentially of wider interest to other EMEs for two reasons. First, the striking similarities in the pattern of income distribution in these economies recently reported by Milanovic (1995) and Hassan and Peters (1996). Second, a comparison of the income tax systems in these economies - as shown in section 2 - reveals that these systems suffer from similar deficiencies as Bulgaria's system, notably, low exemption level for the poor, large number of tax brackets, and high rates. So the analysis is potentially capable of providing useful direction for improving the design of personal income tax not only in Bulgaria, but also in other Eastern European countries contemplating tax reform.

The remainder of the paper comprises three sections. Section 2 reviews the 1992 personal income tax structure and potential and actual revenue performance, utilizing the 1992 income distribution data. This section also compares Bulgaria's personal income tax system with those in other economies, notably transitional economies. Section 3 presents and discusses the counterfactual analysis of alternative tax structures with equal or better revenue raising potential and re-distributional impact. The analysis also takes into account the existing high tax evasion level. Conclusions and thoughts on broader implications of the analysis for tax reform in other EMEs are given in the final section.

## **2. The Need For Revenue**

The evolution of Bulgaria's tax revenues and fiscal balance relative to GDP since 1991 are shown in Table 1. The table shows that the country experienced a decline of tax revenue/GDP -- from nearly 38 percent of GDP in 1991 to 28 percent of GDP in 1996, and is

estimated to remain at that level in 1997. With the large contraction of output shown in Table 1, the decline of revenue in real terms was even larger than suggested by falling ratios to GDP. Revenue losses from taxes on corporate income accounted for the larger share of the decline of revenue. Profits tax revenue, once the key source of government revenue, has become far less important, falling from 17.3 percent of GDP in 1991 to 2.2 percent in 1993, before recovering to 4.5 percent in 1996. These, together with social security contributions, were the main sources of government revenues under the command economy. Table 1 also shows that the relative importance of personal income tax is increasing, particularly when compared with the dwindling revenue performance of profits tax associated with the erosion of the corporate income tax base (Bogetic and Hillman, 1994). Indeed, the revenue productivity of personal income tax has not only been rising but has even surpassed profits tax revenue performance since 1993.

Though the personal income tax has increased in relative importance as a source of revenue, its contribution to GDP is still lagging behind market economies and several Eastern European countries. For instance in most OECD countries, income taxes, excluding social security contribution, amount to between 10 and 15 percent of GDP (McLure 1990). Also, in Romania, a country at a similar stage in the transition process, the share of personal income tax revenue in GDP was 8 percent in 1992 (Shome, Haindl, and Schenone, 1993). This indicates that the revenue potential of this tax instrument is yet to be fully exploited in Bulgaria.

The overall high tax burden (nearly 30 percent of GDP) is not surprising, given the prevalence of state participation in many economic activities and provision by state of many services (e.g., social security expenditures accounted for nearly 10 percent of GDP in 1996). Despite the relatively high tax burden, the fiscal deficit was large, ranging from 6 to 13 percent of GDP during 1991-1996. Thus the need for revenue reflects the level of government expenditure.

**Table 1: Tax Revenue and Fiscal Deficit, 1991-1997**  
(in percent of GDP)

Tax	1991	1992	1993	1994	1995	1996	Est. 1997
Income tax	3.8	5.4	5.0	4.4	4.2	4.7	4.7
Profits tax	17.3	6.8	2.2	3.7	3.8	4.5	4.5
Social security contributions	7.8	10.7	10.1	8.9	8.0	7.3	7.3
Excises and customs	4.8	4.6	6.8	6.2	5.2	3.7	3.7
Turnover/ VAT	3.8	3.6	3.5	7.3	6.8	7.0	7.0
Other taxes	0.0	2.0	1.3	1.3	1.7	1.0	1.0
Total tax revenue	37.5	33.1	28.9	31.7	29.7	27.9	27.9
Fiscal Deficit	8.2	7.2	10.9	6.4	5.7	13.4	4.4
memo. item							
GDP growth	-11.7	-7.3	-1.5	1.8	2.1	-10.9	-7.4

Source: Hassan and Bogetic (1996); World Bank (1997).

Before discussing the revenue potential, it is necessary to outline the actual tax structure and the associated actual revenue performance. The 1992 personal income tax exemplified a steeply graduated tax-rate schedule (see Table 2). There were seven tax brackets including the lowest tax-free bracket. The exemption level for the poor was low, comprising individuals earning up to 9,000 Lev, or about 50 percent of average household per capita income as reported in the 1992 household budget survey (nearly 88 percent of the minimum annual wage). There was a progressive scale, with marginal tax rates ranging from 20 percent to a maximum of 40 percent at annual income over 240,000 Lev.



What is the potential revenue that this income tax structure could generate? To calculate the potential revenue, it is important to know not only the aggregate tax base -- individual incomes -- but also its distribution.

**Table 2: Bulgaria's Personal Income Tax Schedule, 1992**

Annual income (Lev)	Annual tax schedule
0- 9,000	tax free
9,000 - 12,000	20 % on excess over 9,000
12000.01- 36,000	600+ 24 % on excess over 12,000
36,000.01 - 72,000	6,360+ 28 % on excess over 36,000
72,000.01-120,000	16,440 + 32 % on excess over 72,000
120,000.01-240,000	31,800 + 36 % on excess over 120,000
over 240,000	75,000 + 40 % on excess over 240,000

*Source: Tax Notes International Vol. 6, No. 19, 1993, p. 1140.*

Bulgarian households' income level and distribution for 1992 was derived from the 1992 Individual Budgets of Households Survey compiled by the National Statistical Institute (NSI) of Bulgaria.<sup>2</sup> The sample covered 2202 households. It was constructed as a two-tier random sample based on a sample frame developed from the 1985 Population Census. The data allow a preliminary examination of the questions I am interested in: (i) how well the tax brackets and rates capture the revenue potential of their respective income groups, and (ii) how well they serve any distributional objectives implicit in the existing tax structure? To this end, the section briefly discusses the relationship between the distribution of income and the

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<sup>2</sup>/A more detailed study of the country's income distribution, including details of the survey and a discussion of its representativeness, is given by Hassan and Peters (1996).

statutory tax brackets in the 1992 income tax structure. Specifically, potential revenue is defined for each tax bracket as follows:

$$PPITR_j = \sum_i (X_{ij} t_j + \alpha_j), \quad (1)$$

where:

$PPITR_j$  = Potential Personal Income Tax Revenue derived from tax bracket  $j$ ;

$X_{ij}$  =  $i$ th household gross personal income falling in tax bracket  $j$ ;

$t_j$  =  $j$ th statutory personal income tax rate given in Table 2; and

$\alpha_j$  = additional Lev payment associated with each tax rate (see Table 2).

In 1992, the poorest 20 percent of the population received only 10.4 percent of the household per capita income. The average income in this category was 8,151 Lev, or less than half the average household per capita income (16,809 Lev). These levels of income were so low (the minimum annual wage was 10,200 Lev in 1992, or approximately US\$ 443 at the 1992 average exchange rate of 23 Lev per U.S. dollar) that it was hard to argue, on either revenue or equity grounds, that a broadly based income taxation should include this income group in the tax base. Even if it were practically possible to include this group one would have to impose very high average rates to get any worthwhile revenues in view of its very small share of the total income.

The first positive income tax bracket income of the 1992 system was applied to annual incomes between 9,000 and 12,000 Lev at the rate of 20 percent (see Table 2). This bracket covered three quarters of the second income decile, all of the third decile, and 22 percent of the fourth decile (i.e., approximately 20 percent of the total number of potential taxpayers). But the average income in these three income decile as a share of the average household per capita income was only 56, 65, and 74 percent, respectively. These levels of income were relatively low and potential revenues from personal income tax as a share of total personal income were therefore small, amounting to 1.2 percent for the second income decile and 3.5

percent for the third one. This means that the first positive tax bracket was rather narrow in relation to the income group it covered.

The second positive income tax bracket of 24 percent covered 78 percent of the fourth income decile, all of the fifth through ninth deciles, and 65 percent of the highest income group in 1992. This tax bracket had the broadest base, covering nearly two-thirds of the total number of households. Potential revenue as a share of total personal income was in the range of 4.7 to 16.5 percent, depending on the number of households subject to tax in each of the income decile in question.

The next three tax brackets of the 1992 schedule given in Table 2 covered a small part of the households. The 28 percent rate was applicable to only 73 households in the survey or one third of the top income decile. Also, tax rates of 32 and 36 percent covered only three households in the 1992 survey. These brackets were extremely narrow relative to the tax base which they were designed to tap. Perhaps even more striking is the fact that the maximum 40 percent tax rate applied to incomes of over 240, 000 Lev exceeded the maximum income reported in the 1992 household budget survey, indicating that this tax bracket was applied to a nonexistent base! Figure 1 shows the mismatch between the 1992 income distribution and bracket/rate tax structure.

Total potential personal income tax revenue (TPPITR) can be expressed as follows:

$$TPPITR = \sum_j \sum_i (X_{ij} t_j + \alpha_j), \quad (2)$$

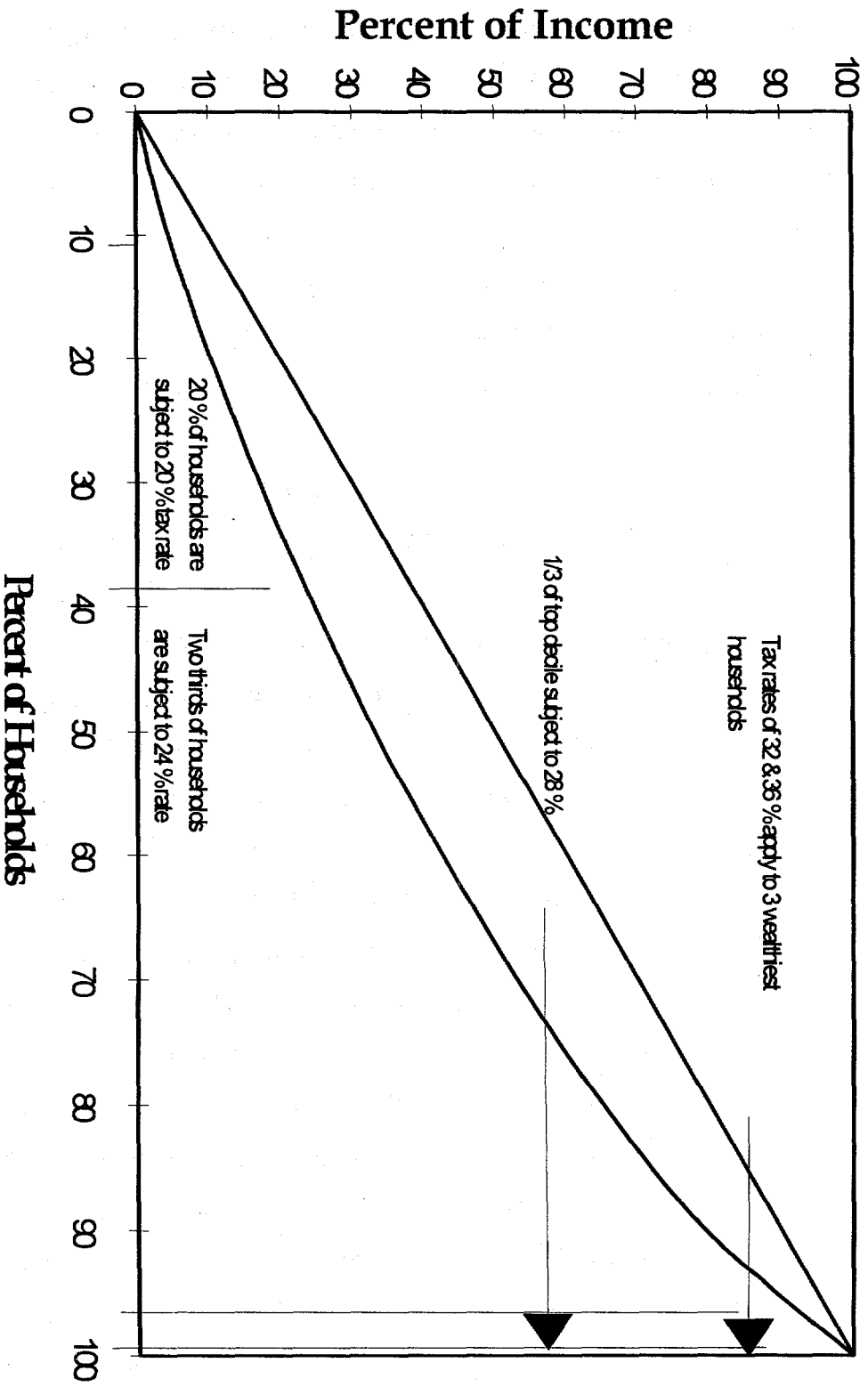
where:

$j = 1, 2, 3, \dots, 7$  (i.e., seven tax rates as given in Table 2);

$i = 1, 2, 3, \dots, 2202$  households included in the survey; and  $X_{ij}$ ,  $t_j$ , and  $\alpha_j$  are as defined in equation 2.

The application of equation 2 to household income as recorded in the 1992 survey yielded potential revenue amounting to Lev 4.1 million with an average income tax payment of Lev 1850 per capita, or a potential average income tax rate of 8.3 percent. This amount was substantially higher than the actual 1992 income tax payment of Lev 1.5 million, giving an

**Figure 1: The Share of Households Included in Each Tax Bracket/Rate**



average payment of only Lev 681, or an effective average income tax rate of 4.06 percent. Apparently, the 1992 structure of brackets and tax rates showed a gross mismatch with the underlying income distribution which they were designed to "capture" (see Figure 1 ).

Next, I analyzed the structure of effective personal income tax rate (EPITR), defined as the percentage of household per capita income actually paid as personal income tax by income decile. The survey results showed that low-income households had markedly lower effective tax rates than higher-income households. For the lowest income decile, this ratio was as small as 1.4 percent of income, whereas the top income class paid more than four times higher rate (Hassan and Bogetic, 1996). Furthermore, the effective tax rates showed a steady rise with income over a range of intermediate income levels (deciles two through six), suggesting a very progressive 1992 system.

The analysis of potential tax revenue was combined with actual tax revenue to derive an index of personal income tax non-compliance (IPITNC<sub>s</sub>), defined to be the ratio of potential income tax revenue to actual revenue for each income class:

$$IPITNC_s = PPITR_s / EPITR_s, \quad (3)$$

Where  $s=1, 2, 3, \dots, 10$ , (i.e., 10 income deciles).

Equation 3, revealed that, on the average, potential income tax revenue was at least twice as large as the amount actually collected. Furthermore, the non-compliance index rises with the level of income. For instance, the effective tax rate for the top income class ( $EPITR_{10}$ ) was only 5.8 percent, while the potential rate ( $PPITR_{10}$ ) was 17.7 percent, giving an index of tax non-compliance ( $IPITNC_{10}$ ) of 304 percent for 1992.

Finally, Bulgaria's statutory tax rates and brackets are rather high by international standards. For example, Sicat and Virmani (1988) and McLure (1990) present extensive statistical information on the tax rates and brackets in over sixty developed and developing countries. They concluded that the reduction of income tax rates is probably the most dramatic manifestation of the tax reform wave that swept both developed and developing

countries over the past two decades (e.g., the top rate has been reduced from 60 to 40 percent, a relative reduction of one third). In contrast, Bulgaria has increased its rates with the top rate rising from 40 percent in 1992 to 52 percent in 1993. Bulgaria's top rate is the highest from among the 10 countries presented in McLure's study, exceeding those of the two notable outliers -- Sweden and Japan<sup>3</sup>. Although the 1997 amendment to Bulgaria's personal income tax has reduced the top-bracket rate to its 1992 level of 40 percent, several countries have further reduced, in the late 1980s and early 1990s, their income tax rates (notably Colombia and Indonesia), which makes the contrast even more striking.

However, a comparison of income tax rates in EMEs, reveals that part of the high income tax rate 'syndrome' may be a regional peculiarity of these economies. The following nine countries: Armenia, Azerbaijan, Czech Rep., Hungary, Poland, Romania, Tajikistan, Turkmenistan, and Uzbekistan, representing a spectrum of EMEs all have extremely high top marginal tax rates, often higher than Bulgaria's top rate. Interestingly, the minimum marginal tax rate is also rather low, between 6 percent in Romania and 15 percent in the Czech Republic<sup>4</sup>. This suggests *prima facie* that, much like Bulgaria, other transitional economies may also face design problem in their income tax systems. This particularly so if the underlying income distribution in those countries is not adequately taken into account in designing appropriate tax rates and tax brackets. Recent analyses of income inequality and poverty trends in EMEs by Milanovic (1995) and Hassan and Peters (1996), show some striking similarities in the patterns of poverty and inequality in these economies. In particular, the pattern of inequality of income (e.g., Gini coefficient) in Bulgaria is found similar to that in Poland and Romania. Therefore, to the extent that the income tax system in Poland and Romania may suffer from similar deficiencies as Bulgaria's system, particularly low exemption

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<sup>3</sup>/Countries included in the study are: Australia, Canada, Columbia, Indonesia, Israel, Japan, Mexico, Sweden, UK and USA (Table 15.1, p. 282).

<sup>4</sup>/There is an acute lack of country studies on the effects of taxes in the course of economic transition. Some exceptions include studies of Czechoslovak Republic (Coulter *et al.* 1993), Romania (Shome, Haindl and Schenone 1993) and former Soviet Republics (Shome and Escolano 1993).

level, large number of brackets, high rates, and mismatch between income distribution and bracket/rate tax structure, a similar analysis for these countries may provide useful direction for improving the design of their income taxes.

### **3. Towards Simpler, Lower Rate Structure**

The previous analysis has shown that the income tax structure is associated with the significant tax non-compliance (i.e., potential revenue is, on the average, at least twice the amount actually collected). This reflects poor design of tax rates and tax brackets, and the incentives for tax evasion inherent to the present income tax system. Incentives for tax evasion are also amplified by the vastly expanded number of individual taxpayers relative to the pre-reform period. Given the slowly improving tax administration, considerably larger number of taxpayers means that the probability of detection of non-compliance is reduced, making tax evasion less costly. And if evasion becomes sufficiently endemic, due to a social conformity effect, even small changes in tax rates may induce the remaining taxpayers to switch to the state of evasion causing a large increase in evasion (see Myles and Naylor, 1996).

I therefore explore the possibility of simplifying the tax structure and reducing the incentives for tax evasion by lowering highest marginal rates, while generating equal or more revenues from a broad base<sup>5</sup>. This would reduce tax non-compliance and improve the effectiveness of the income tax as a revenue raising tool, and as an instrument of redistribution. It would also ease the enforcement of such a simpler tax structure. In this context, I constructed several counterfactuals to examine the scope for improving the income tax structure in three interrelated areas which are implied by the previous analysis: (i)

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<sup>5</sup>/Lower tax rates in a more simple system increase compliance and revenue, and a simple tax system is less of a constraint to economic growth so that the tax base is widened, both through less evasion and growth, leading to greater revenue (see Morrissey, 1995). More basically, lower taxes have lower economic cost, i.e. excess tax burden, and they are desirable on efficiency grounds. Furthermore, if the tax system can be changed so that the protection for the poor is at least maintained and even increased, then such a change would satisfy the Rawlsian notion of social justice as well.

reduction in the number of tax brackets broadening their coverage; (ii) reduction in the highest marginal tax rates; and (iii) consideration of alternative income threshold at which a positive tax payment must be made. These changes aim to tap the information on the underlying 1992 level and distribution of income to ensure equal or better revenue as well as protection of poor than under the 1992 system. In a nutshell, the counterfactual results show that the 1992 income tax system could be surpassed in its revenue raising and re-distributional effects by a much simpler tax system.

### **3.1. A Low, Flat Rate Tax System with High Exemption Can Raise More Revenue and Increase Protection of the Poor**

Consider a flat rate system with higher exemption level which incorporates better potential revenue and equity effects. Given the income levels and distribution provided by the survey, a very simple tax structure that exempts the poor (lowest 20 percent of the population) and levies a flat rate of 11 percent on the rest of the population would raise approximately the same revenue as the 1992 system (see panel a of Table 3). That is, the flat rate yields a potential tax revenue per taxpayer of 1,881 Lev, compared to 1,850 Lev under the 1992 system, i.e., revenue-neutral reform. This means that a linear system with a rate that is approximately half the lowest current statutory rate could generate approximately the same revenue as the 1992 tax system. The reason why the surprisingly low flat tax rate is found to be feasible from the revenue perspective lies in the fact that the underlying income distribution is not adequately taken into account in designing the 1992 tax rates and tax brackets (see Figure 1). An alternative to this low flat rate would be a somewhat higher uniform rate of 20 percent along with the same, higher exemption for the poor. This linear rate system, which could be justified on revenue grounds, has a significantly higher revenue potential of 3036 Lev per taxpayer, compared to 1,850 Lev under the 1992 personal income tax schedule (see panel b of Table 3).



### 3.2. A More Progressive, Three-Bracket System Can Raise Even More Revenue

The main arguments made in favor of a simple system with fewer tax brackets and flat rate(s) is simplicity, revenue potential and other potential supply side incentives related to saving and investment<sup>6</sup>. Its biggest disadvantage is the lack of progressiveness. Besides the acknowledged need to generate revenue, personal income tax is also often expected to perform a redistributive function. The significant excess of the income of the rich above mean income suggests that -- on the basis of the principle of ability to pay -- it is desirable to collect substantial tax revenues from the rich<sup>7</sup>. To explore the revenue implications of alternative, but more progressive income tax than the previously discussed flat-rate tax, I have constructed an alternative tax structures with broad, yet realistic, tax brackets derived from the 1992 income distribution. Panel c of Table 3 shows an alternative system with four brackets (including the lowest tax-free bracket, as in the flat-rate system) and four marginal rates of zero, 20 percent, 30 percent, and 40 percent. This system has the potential to raise an average

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<sup>6</sup>/The analysis does not attempt to assess longer-term effects of tax policy through changes in the level of capital formation and growth. Lower flat rates have the obvious advantage of reducing disincentives to a wide range of economic activities, including work effort and saving and investment. Nevertheless, it is difficult to quantify these effects although there is often no question about their direction. For instance, Marsden's (1986) study uses evidence from 20 countries, spanning almost the entire spectrum of world economies, to show that those with lower taxes experienced faster economic growth and higher employment and productivity. Hall and Rabushka (1985) estimate the potential gains from their proposed simple flat wage and business tax as a 6 percent increase in output from increased total work in the US economy and an additional increment to total output of 3 percent from added capital formation, p. 75. Eissa (1995, 1996) analyzed the labor supply response to the US Tax Reform Act of 1986. She found that while married women at the top of the income distribution increased their labor supply by 18 percent, male responsiveness was very little. For a comprehensive survey of the economic effects of the tax reform Act of 1986 on the US economy, see Auerbach and Slemrod (1997).

<sup>7</sup>/ Stern (1987) shows that greater inequality in income-earning ability did indeed result in higher optimal tax rates. On the other hand, Brennan and Buchanan (1980) and Harberger (1993) argue that the design of tax policy should be guided primarily by practical considerations such as simplicity, uniformity and transparency as opposed to the rates implied by the optimal tax theory. Tanzi (1992), Bird (1989), and Slemrod (1990) have also stressed the need for tax policy to pay more attention to the practical and administrative constraints.

**Table 3: Alternative Income Tax Systems and Their Revenue Potentials****(a) A Flat 11 Percent Income Tax With Exemption for the Poor**

Income interval (Lev)	Income share (%)	Tax rate (%)	Average tax revenue (Lev)
3324 - 10133	20	0	0
10134 - 16669	40	11	1454
16670 - 26864	30	11	2284
26855 +	10	11	4032
<u>Weighted average</u>		<u>8.8</u>	<u>1881</u>

**(b) A Flat 20 Percent Income Tax With Exemption for the Poor**

Income interval (Lev)	Income share (%)	Tax rate (%)	Average tax revenue (Lev)
3324 - 10133	20	0	0
10134 - 16669	40	20	2643
16670 - 26864	30	20	4152
26855 +	10	20	7331
<u>Weighted average</u>		<u>16</u>	<u>3036</u>

**(c) A More Progressive, Three Bracket Income Tax System**

Income interval (Lev)	Income share (%)	Tax rate (%)	Average tax revenue (Lev)
3324 - 10133	20	0	0
10134 - 16669	40	20	2643
16670 - 26864	30	30	6228
26855 +	10	40	14661
<u>Weighted average</u>		<u>21</u>	<u>4391</u>

Source: Author's estimates using 1992 Individual Budget of households Survey, NSI.

revenue of 4,391 Lev per taxpayer, or more than twice the potential revenue of the 1992 system, i.e., revenue-enhancing reform.

### 3.3. A More Realistic Revenue Potential Estimate

The above estimate of revenue potential must be considered an upper bound because it assumes that taxpayers will fully comply with the proposed tax system, (i.e., no tax evasion).

The following revised estimates shown in Table 4 take into account the personal income tax non-compliance (IPITNC) levels discussed in section 2. The revised estimates of revenue potential are lower than the initial findings, reflecting significant tax evasion. For instance, revenue potential under the 20 percent flat rate system showed a lower level of 1898 Lev per taxpayer, compared to 3036 Lev under the initial estimate (see Panel a of Table 4 and panel b of Table 3). Nevertheless both of the estimates surpass the revenue productivity of the 1992 personal income tax schedule.

Since the non-compliance level rises with higher tax rates, the proposed three-bracket progressive tax system indicates a significantly lower revenue potential of 2005 Lev per taxpayer, compared to 4391 Lev per taxpayer under the initial findings (see Panel c of Table 3 and panel b of Table 4). Again the proposed three-bracket progressive schedule has potentially higher revenue than the 1850 Lev per taxpayer under the 1992 income tax system. Finally, the first positive tax rate under the 1992 tax system is 20 percent. Thus there is no data to assess the level of non-compliance associated with tax rates lower than 20 percent. As such I was unable to revise the revenue potential estimate under the proposed 11 percent flat rate system. However, for a linear system with a rate that is approximately half the lowest 1992 statutory rate, I believe that the magnitude of tax evasion effect is likely to be small.

It should be noted that in all of the counterfactual experiments the income threshold at which positive tax payment must be made is increased from 9,000 Lev (a level at which only 13 percent of the population are exempted) to 13,215 Lev (a level at which 20 percent of the population are exempted), thus favoring a much broader spectrum of the poor households (i.e.,

pro-poor reform). Also, the significant reduction in the number of tax brackets may well facilitate administration. Finally, the low alternative tax rates are more amenable to compliance and enforcement. But the 1993 amendment to the 1992 income tax law indicates a

**Table 4: Alternative Tax Systems and Their Revised Revenue Potential Taking Into Account Tax Non-Compliance Index (PITNC<sub>s</sub>)**

**(a) A Flat 20 Percent Income Tax With PITNC of 160 Percent**

Income interval (Lev)	Income share (%)	Tax rate (%)	Average tax revenue (Lev)
3324 - 10133	20	0	0
10134 - 16669	40	20	1652
16670 - 26864	30	20	2595
26855 +	10	20	4582
<u>Weighted average</u>		<u>16</u>	<u>1898</u>

**(b) A Progressive Three-Bracket Income Tax System With PITNC Ranging from 160 Percent to 304 Percent**

Income interval (Lev)	Income share (%)	Tax rate (%)	Average tax revenue (Lev)
3324 - 10133	20	0	0
10134 - 16669	40	20	1652
16670 - 26864	30	30	2511
26855 +	10	40	5910
<u>Weighted average</u>		<u>21</u>	<u>2005</u>

*Source: Author's estimates using 1992 Individual Budget of households Survey, NSI.*

return to high tax rates and more complex schedule<sup>8</sup>. Under the 1993 Personal Income Tax Law there were ten income tax brackets, an increase of three brackets with higher rates: 44, 48, and 52 percent. Such amendment would complicate -rather than simplify- and strain existing scarce administrative tax capabilities<sup>9</sup>. Under such circumstances, the revenue, redistributive, and developmental objectives of tax amendment may prove difficult to attain. Fortunately, the 1997 amendment of the tax law has moved the personal income tax system toward less nominal progressivity in its rate schedule. For instance, the top-bracket rate has been reduced from 52 percent to its 1992 level of 40 percent. Second, the number of tax brackets has been halved in comparison with its number in 1993. Finally, the threshold at which positive personal income tax payment must be made is increased by 20 percent, reducing the tax burdens on the poor.

One of the reasons why the proposed tax systems surpassed the 1992 system in its revenue raising and re-distributional effects lies in the fact that the underlying income distribution is not adequately taken into consideration in designing the 1992 tax rates and brackets. Table 5a shows the tax bracket income level relative to mean per capita income as obtained from the 1992 household budget survey. This ratio shows several interesting characteristics of the 1992 tax brackets. The zero bracket (exemption level) is very narrow, extending from zero to less than half the mean per capita income. Positive income payments start at higher income level. However, it is only at incomes above 7 times mean per capita income that the marginal tax rate becomes substantial -- at 36 percent rate. The narrowness of higher tax brackets is evident. The top tax rate of 40 percent requires an income of 14.3

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<sup>8</sup>/Bulgaria's 1993 personal income tax schedule is given in *Tax Notes International*, Volume 6, No. 19, 1993, page 1139.

<sup>9</sup>/The inherent administrative weaknesses necessitate simple tax system with few brackets and rates. Tanzi (1991) pointed to the adverse effect of the transition to a market economy on the efficiency of tax administration -- from centralized tax collection or, in some cases, confiscation under the planned regime to the new decentralized market environment -- which requires the introduction and development of an entirely new tax administration machinery, a process which inevitably takes time. This was perhaps especially the case for taxing Bulgarian self-employed and non-wage income in a rapidly growing small-scale service sector which is difficult to bring into the tax net.

times average income. The second highest rate of 36 percent is reached by taxpayers earning as much as 7.1 times the average and the income level at which the rate of 32 percent applies is 4.3 times average income. The 1992 household budget survey shows that of the 2202 households surveyed, only one household has a per capita income that is greater than seven times average income, and no one reported income greater than 14 times the average. In sum, the 1992 tax brackets are extremely narrow and do not adequately tap the revenue potential of their respective income groups. Furthermore, these ratios are high compared to other Eastern European Countries. For instance, the income level where the maximum marginal rate is applied in Romania started with 3.44 times per capita GDP in 1992 (Shome, Haindl and Schenone (1993). This partially explains the relatively low potential revenue and effective tax rates under the 1992 tax system. In contrast, setting tax rates as low as possible, reducing the number of brackets and defining them as broadly, yet realistically as possible, and raising the exemption level, taking into account the underlying income level and distribution, would increase revenues<sup>10</sup>. For instance, all of the proposed tax systems extend the exemption level to cover the lowest 20 percent. Thus positive income tax payments start at a relatively higher income level, 60 percent of average per capita income, compared to 50 percent under the 1992 system. However, proposed tax rate becomes substantial (i.e., 30 percent) at incomes around mean per capita income. The proposed top rate of 40 percent requires an income nearly twice the average level (see panel b of Table 5).

A main factor responsible for the erosion of effective tax rates has no doubt been the weakness of tax administration, especially in a rapidly growing small-scale and self-employed private sector which is difficult to bring into the tax net. However, adjusting or modifying the income tax law so as to facilitate compliance and enforcement may well be the most expeditious way of improving tax administration.

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<sup>10</sup>/A similar analysis of the revenue performance and distributional impact of the 1997 tax changes requires an examination of a more recent household survey data. Future research employing such data is highly encouraged.

**Table 5: Tax Rate/ Base and Tax Bracket Relative to Average Income****(a) The 1992 Personal Income Tax System**

Tax rate (%)	Tax base (No. of households)	As percent of total households	Ratio of tax bracket to average income
0	277	13	-
20	433	20	0.5
24	1416	64	0.7
28	73	3	2.1
32	2	0	4.3
36	1	0	7.1
40	0	0	14.3
<u>Total</u>	2202	100	

**(b) The Proposed Personal Income Tax System**

Tax rate 11 % flat	Tax rate 20 % flat	Tax rate 3-bracket progressive	Tax base (No. of households)	As percent of total households	Ratio of tax bracket to average income
0	0	0	440	20	-
11	20	20	881	40	0.60
11	20	30	661	30	0.99
11	20	40	220	10	1.60
Total			2202	100	

Source: Author's estimates using 1992 Individual Budget of households Survey, NSI.

#### **4. Conclusions**

The analysis of the 1992 household budget survey indicates that Bulgaria can benefit from a much simpler and lower income tax structure than the one which prevailed in 1992. Two possible types of alternative income tax systems have been explored, a flat rate and a progressive, but simpler three-bracket rate system, and their implications for potential revenue and income distribution. The analysis suggests that each of these alternative systems would have been more efficient in terms of potential revenues, while increasing the protection to the poor through increasing the exemption level, i.e., revenue-enhancing and redistributive tax reform. The results are robust to the inclusion of the existing significant tax evasion.

The actual developments since 1992 have, first, moved Bulgaria even further away from the proposed simple income tax systems. In particular, the 1993 amendments to the 1992 personal income tax have complicated the system in two major ways. First, while the 1992 marginal income tax rates were not low by international standards, the rates implemented in the 1993 amendment were even higher, with top rate rising from 40 to 52 percent. Second, the number of tax brackets were increased from 7 to 10, with three additional brackets having higher rates of 44, 48, and 52 percent. These more complex and higher rates are almost certain to complicate administration and enforcement, and provide powerful additional incentives for tax evasion. Fortunately, the country began to move toward less nominal progressivity in its personal income tax structure, following the 1997 tax reform program.

But whichever alternative income tax structure is chosen, it should be clear from the above analysis that the 1992 system and, even more so, the 1993 amended income tax system has inferior characteristics to simpler and more efficient alternatives. Therefore, further efforts in improving the income tax system in Bulgaria must aim to raise the exemption level, set the rates as low as possible, and reduce the number of brackets and define them as broadly, yet realistically, as possible. Reform in this direction would not only improve the revenue performance of this important tax, but also improve its protection of the poor. The government has made significant progress in adopting several of these measures in its 1997 tax



reform program. The country began to move toward less nominal progressivity in its rate structure, following the 1997 amendment to its Personal Income Tax Law. For example, the top-bracket rate has been reduced from 52 percent to its 1992 level of 40 percent. Second, the number of tax brackets has been halved in comparison with its number in 1993. Third, the exemption level has been increased by 20 percent. Such changes would certainly reduce tax burdens on the poor. Furthermore, broader and simpler tax bases would reduce opportunities for tax evasion, facilitate administration, and enhance revenue.

Given that Bulgaria's distribution of income is similar to that of other emerging market economies, and to the extent that personal income tax system in these economies suffer from similar deficiencies as Bulgaria's system, the reform suggestions made in this paper are potentially relevant to other emerging market economies contemplating tax reforms.

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